

CLAIMS

- 5 1. A structural element (1), particularly a hybrid structural element, for a cross member of a vehicle, comprising a base body (2) at least partially lined with plastic (4), which is provided with at least one flow tap (8a to 8e), in conjunction with which the base body (2) is
10 provided, in the area of the flow tap (8a to 8e), with a flow-guiding means (9).
- 15 2. The structural element as claimed in claim 1, in which the flow-guiding means (9) is executed as a smoothing element (11).
- 20 3. The structural element as claimed in claims 1 or 2, in which the flow-guiding means (9), in particular the smoothing element (11), is executed as a plastic structure (K) of varying thickness.
- 25 4. The structural element as claimed in claim 3, in which the plastic structure (K) exhibits a thickness of 0.1 mm to 10 mm.
- 30 5. The structural element as claimed in claims 3 or 4, in which the plastic structure (K) is executed, at least partially, in a multi-layered fashion, and in particular from a combination of hard and soft layers.
- 35 6. The structural element as claimed in any one of claims 3 to 5, in which the smoothing element (11) is formed by an arched thickening of the plastic structure (K).
7. The structural element as claimed in any one of claims 1 to 6, in which the flow-guiding means (9) is executed as a deflection element (10).

8. The structural element as claimed in any one of claims 1 to 7, in which the deflection element (10) extends from a layer of plastic on the inner wall in the form of an arc into the cavity of the base body (2).

9. The structural element as claimed in claims 7 or 8, in which the deflection element (10) is executed separately and is joined to the plastic layer.

10. The structural element as claimed in any one of claims 7 to 9, in which the deflection element (10) is executed in a single piece with the plastic lining.

11. The structural element as claimed in any one of claims 7 to 10, in which a plurality of deflection elements (10) are arranged parallel next to one another viewed in the longitudinal direction.

12. The structural element as claimed in any one of claims 1 to 11, in which the flow-guiding means (9) is executed as a combined guiding and reinforcing element (12).

13. The structural element as claimed in claim 12, in which the combined guiding and reinforcing element (12) is formed by a channel element (14), a deflection element (10) arranged in the channel element (14), and at least one reinforcing element (16) supported by the channel element (14) against the base body (2).

14. The structural element as claimed in claims 12 or 13, in which the channel element (14) exhibits a reducing cross section viewed in the direction of the flow tap (8a to 8e).

15. The structural element as claimed in any one of
claims 12 to 14, in which the deflection element
(10) extends from the channel element (14) in the
form of an arc and closes this in the vicinity of
the flow tap (8a to 8e) at the end of the combined
guiding and reinforcing element (12) and
discharges into an opening (O) in the base body
(2).
16. The structural element as claimed in any one of
claims 12 to 15, in which a plurality of
reinforcing elements (16) are arranged in the form
of transverse ribs in the cavity (H) formed
between the channel element (14) and the base body
(2).
17. The structural element as claimed in claim 16, in
which the angle of the transverse ribs runs
perpendicular to the channel (6) or obliquely at
an angle of 0° to $\pm 60^\circ$.
18. The structural element as claimed in any one of
claims 1 to 17, in which the flow-guiding means
(9) is executed at least partially or completely
separately and is capable of being introduced into
the base body (2).
19. The structural element as claimed in any one of
claims 1 to 18, in which a plurality of flow-
guiding means (9), in particular a smoothing
element (11), a deflection element (10) and/or a
combined guiding and reinforcing element (12), are
arranged in a single flow tap (8a to 8e).
20. The structural element as claimed in any one of
claims 1 to 19, in which the flow-guiding means
(9) discharges in the vicinity of the flow tap (8a
to 8e) into an opening (O) in the base body (2).

21. The structural element as claimed in any one of claims 1 to 20, in which the base body (2) viewed in the longitudinal direction is provided with a plurality of flow taps (8a to 8e) situated at a distance from one another.
22. The structural element as claimed in any one of claims 1 to 21, in which the base body (2) viewed in the transverse direction is provided with opposing flow taps (8a to 8e).
23. The structural element as claimed in any one of claims 1 to 22, in which the base body (2) is provided at least partially with a plastic layer, and in particular is extrusion-coated or foam-coated.
24. The structural element as claimed in any one of claims 1 to 23, in which the base body (2) is executed from a metal, a light metal or its alloys, and in particular aluminium, magnesium, titanium or refined steel, and exhibits a wall thickness from 0.4 mm to 2.0 mm.
25. The structural element as claimed in any one of claims 1 to 24, in which the base body (2) exhibits a wall thickness that varies in different areas.
26. The structural element as claimed in any one of claims 1 to 25, in which the base body (2) is lined in areas with a material of varying wall thickness that has been caused to foam by physical or chemical means.
27. Use of a structural element (1) as claimed in any one of claims 1 to 26 as an instrument panel supporting member in a vehicle with a channel (6),

in particular with at least one air guiding channel and/or a cable duct.

- 5 28. The use of a structural element (1) as claimed in any one of claims 1 to 26 as a cross member in a vehicle, in particular as a cross member between the A-pillars of a vehicle or as a front-end structural member.
- 10 29. The use of a structural element (1) as claimed in any one of claims 1 to 26 as a structural element in a vehicle, in particular as a hollow structural element, as a longitudinal member, sill, center tunnel structure, front, side or transverse member, vertical structural element, A-, B-, C-, 15 D-pillar, or roof structural element.
- 20 30. The use of a structural element as claimed in any one of claims 1 to 26 as a structural element in a vehicle, in particular as a hollow structural element, through which the air for a heating, cooling, air conditioning or ventilation device is conducted.